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Canadian Disability Participation Project

The CDPP is an alliance of university, public, private and government sector partners working together to enhance community participation among Canadians with physical disabilities. The research team for this project has expertise in exercise psychology, spinal cord injury, and disability studies.



Physical Activity Among Individuals with Spinal Cord Injuries Who Walk

The purpose of this document is to summarize published research that examines physical activity among individuals living with a spinal cord injury (SCI) who have some ability to walk, or ambulate. In particular, we reviewed the amount, types, and outcomes of physical activity in this population, along with the factors that help or hinder them from participating in physical activity.

People Who Walk with SCI are Overlooked

More than half of SCIs are incomplete, meaning that some recovery of physical function is more likely¹. Some research suggests that up to 75% of individuals with incomplete SCIs will retain some walking capacity^{2,3}, and this number is expected to grow over time⁴ as acute care and rehabilitation treatments continue to improve. Yet research continues to focus primarily on individuals with SCI who use a wheelchair, which needs to change if we are to better understand the unique participation experiences of individuals who walk with SCI.

Physical Activity is Important

No matter whether individuals with SCI walk or use a wheelchair (or both), physical activity is important for maintaining good physical and psychosocial health^{5,6}. But very few people with SCI are getting enough physical activity to reap the benefits – and research suggests that people with SCI who walk do half as much leisure-time physical activity than people with SCI who use wheelchairs⁷. Lower levels of leisure-time physical activity might be due to barriers such as greater fatigue and pain⁸, and poorer wheelchair skills⁹. Although it is not known what specific factors help people with SCI who walk to become more active, there is evidence that, like the general population, they need the capability, opportunity, and motivation to be physically active¹⁰.

We don't really know the types of exercise that are most popular or beneficial for people with SCI who walk. However, one study found that walking is the most frequently reported type of physical activity among 33 ambulatory older adults with a SCI¹¹. Another study found that aerobic exercise training can improve cardiovascular health and reduce pain, fatigue, and depression among people with SCI who walk¹².



Current Study

Up to this point, there hasn't been systematic research undertaken to examine physical activity among this population. As a first step, we conducted a systematic scoping review in 2020 to identify the amount, types and outcomes of physical activity among individuals with SCI who ambulate¹³, along with factors that prevent them or assist them when participating in physical activity. We wanted to better understand the findings on physical activity in this population to determine what our next steps would be. Synthesizing the research is also an essential step in creating an intervention to support physical activity behaviour for people with SCI who can walk. The review identified 17 articles involving a total of 531 people with SCI who walk. Below is a brief summary.

Category	General Finding	Specific Example
Amount	People with SCI who walk report less activity than wheelchair users with SCI.	Only 7-10% of people who walk with SCI participate in organized sport, compared to 25-28% of wheelchair users with SCI ^{14,15} .
Type	Studies only looked at leisure-time physical activity (and not other types, like physical activity done at work).	Most studies examined aerobic exercise like treadmill walking ¹⁶ or recumbent stepping ¹² .
Barriers and Facilitators	Studies examined factors relating to individuals' capability, opportunity, and motivation to do physical activity. The most commonly studied factors were physical capability and reflective motivation.	For reflective motivation, there was a significant positive relationship between attitudes and intentions and physical activity ¹⁷ . For physical capability, pain was identified as both a barrier and facilitator for physical activity ^{17,18} .
Outcomes	Thirteen outcomes related to physical health and one outcome related to psychological health were identified.	A 6-week progressive aerobic exercise program done 3x per week resulted in cardiovascular benefits, more steps taken per day, 20-40% reductions in pain and fatigue, and a 60% decrease in depression ^{12,19} .

In Summary

More people are able to walk following SCI than ever before, but those who walk participate in half as much physical activity than people with SCI who use wheelchairs. To improve participation among this population, understanding individuals' capability, opportunity, and motivation to do physical activity is important. We conducted a review of the literature to determine the amount, types, and outcomes of physical activity, as well as the factors that help or hinder participation in physical activity. In addition to confirming that people with SCI who can walk participate in low levels of leisure-time physical activity, our review reveals that most research in this area has examined how individuals' motivation (e.g., attitudes and intentions) and physical capability (e.g., pain, fatigue) influence physical activity. We also know that physical activity is good for improving physical health, but little is known about the impact on other participation outcomes. This review helped us to outline next steps for the research process. These next steps include gaining an understanding the quality of physical activity experiences and developing a physical activity intervention.

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